Shamak Dutta

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http://shamak.github.io

Education

2019–now **PhD in Electrical and Computer Engineering**, *University of Waterloo*, Canada.
Advisor: Stephen Smith

2017–2019 **Masters in Systems Design Engineering**, *University of Waterloo*, Canada.
Advisors: Bryan Tripp & Graham Taylor
Vector Institute Research Award (2018, 2019)
University of Waterloo Graduate Scholarship (2019)
International Master's Student Award (2018, 2019)
GPA – 4.0/4.0
Thesis: Correlated Noise in Deep Convolutional Neural Networks

2012–2017 **Bachelors in Computer Engineering**, *University of Waterloo*, Canada.
Engineering International Student Scholarship (2012)
President's Scholarship of Distinction (2012)
President's Research Award (2015)
GPA – 3.7/4.0, Graduated with Distinction

Publications

2018 **Convolutional Neural Networks Regularized by Correlated Noise**.
S. Dutta, B. Tripp, G. Taylor
15th Canadian Conference on Computer and Robot Vision (CRV), 2018.

2016 **Barcodes for Medical Image Retrieval Using Autoencoded Radon Transform**.
H. Tizhoosh, C. Mitcheltree, S. Zhu, and **S. Dutta**
23rd International Conference on Pattern Recognition (ICPR), 2016.

Research Experience

Summer 2018 **Research Intern**, *Preferred Networks*, Tokyo, Japan.
Advisors: Shunta Saito & Masaki Saito
Worked on stochastic conditional video prediction using generative models.

Summer 2017 **Research Intern**, *Latent Logic*, Oxford, United Kingdom.
Advisors: Joao Messias & Shimon Whiteson
Worked on 2D-3D human pose reconstruction from a single frame. Involved estimating the camera pose using 3D-2D correspondences and iterative refinement using particle filters. Built a model to generate the 3D positions of objects in a scene, given the 2D information using a generative-adversarial framework.

Fall 2016 **Research Intern**, *A9.com*, Palo Alto, USA.
Advisor: Erick Cantu-Paz
Part of the Amazon Search Ranking team. Implemented a tweaked version of Deep Structured Semantic Model (Huang et al, 2015) to generate word embeddings, given a query or product title. The embeddings are used to calculate similarity scores to determine relevancy between products and search queries. Prototyped an approximation of the Amazon ranking metric using fully-connected neural nets which achieved competitive accuracy. Gave a tutorial on implementing character-level recurrent neural networks in TensorFlow to 30 people.

Summer 2016 **Undergraduate Research**, *Adaptive Systems Lab*, University of Waterloo, Canada.
Advisor: Dana Kulic
Analysed the use of recurrent neural networks to achieve behaviour cloning of human motion on the HDM05 Motion Capture dataset. Work was done as part of ECE 499 (Independent Research Project). Wrote a final report on my experiments and results; grade: 90/100.

Summer 2016 **Undergraduate Research**, University of Waterloo, Canada.
Advisor: Stephen Smith
Worked on the Generalised Travelling Salesman Problem with overlapping sets. Implemented a solver in Julia, based on large-scale adaptive neighbourhood search using various heuristics.

Fall 2015 **Undergraduate Research**, *KIMIA Lab*, University of Waterloo, Canada.
Advisor: Hamid Tizhoosh
Analysed the use of the hidden representations of deep autoencoders trained on the Radon transforms of medical images as image descriptors. Hidden representations are converted to binary barcodes, which are used in high-performance search and retrieval. Co-author on a paper accepted at ICPR, 2016.

Work Experience

Summer 2018 **Research Intern**, *Preferred Networks*, Tokyo, Japan.

Summer 2017 **Research Intern**, *Latent Logic*, Oxford, UK.

Fall 2016 **Research Intern**, *A9.com*, Palo Alto, USA.

Winter 2016 **Software Engineer Intern**, *A9.com*, Palo Alto, USA.

Summer 2015 **Software Engineer Intern**, *Lookout Security*, San Francisco, USA.

Fall 2014 **Software Engineer Intern**, *Avvasi*, Waterloo, Canada.

Winter 2014 **Software Engineer Intern**, *Achievers Inc.*, Toronto, Canada.

Summer 2013 **Software Engineer Intern**, *pVelocity*, Toronto, Canada.

Courses taken

UW (Graduate): Convex Optimization (O. Michailovich), Computational Neuroscience (B. Tripp), Stochastic Processes (W. Zhuang), Optimal Control (N. Azad).

UW (Bachelors): Machine Learning (P. Poupart), Pattern Recognition (A. Wong), Quantum Mechanics (M. Reimer), Probability Theory (R. Mazumder), Robotics & Control (D. Kulic), Adaptive Algorithms (O. Basir), Computer Networks (S. Naik), Analog Communications (W. Zhuang), Analog Control (S. Smith), Compilers (V. Ganesh), Discrete Math (M. Pei).